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09/615,281	07/13/2000	James A. Folta	CIL-10514	3829

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EXAMINER
GARLAND, STEVEN R

ART UNIT	PAPER NUMBER
2125	3

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/615,281	Applicant(s) FOLTA, JAMES A.	
	Examiner Steven R Garland	Art Unit 2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The disclosure is objected to because of the following informalities: on page 3, the status of 09/454,673 should be updated.

Appropriate correction is required.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4,5,8,9,17, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, line 2, "the group" lacks a proper antecedent basis. It is suggested that "the group" be changed to -- a group--. The remaining claims have a similar problem.

In claim 8, lines 3-4, it is unclear what structure or structures the film has or whether the structure is selected from graded or uniform. It appears that --selected-- should be inserted before "from" in line 3.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-6,8,9, 11-15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Bruijn et al. " Automatic electron-beam deposition of multilayer soft x-ray coatings with laterally graded d-spacing" cited by applicant.

Bruijn teaches depositing graded or uniform films on a substrate using vapor deposition. Bruijn teaches computer control of a moveable mask, moving the mask in a linear direction, use of a shaped hole slit mask, and programming software to control motion. See the abstract; and pages 916-920. Note pages 917-918.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 7, 10, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Bruijn et al. " Automatic electron-beam deposition of multilayer soft x-ray coatings with laterally graded d-spacing" cited by applicant.

Bruijn teaches depositing graded or uniform films on a substrate using vapor deposition. Bruijn teaches computer control of a moveable mask, moving the mask in a linear direction, use of a shaped hole slit mask, and programming software to control motion. See the abstract; and pages 916-920. Note pages 917-918.

Bruijn however does not expressly state that the computer controls acceleration and velocity during positioning of the mask; and that the thickness does not vary more than .1% across the substrate.

It would have been obvious to one of ordinary skill in the art to modify Bruijn to have the computer control the acceleration and velocity of mask so that it can be accurately positioned and also prevent damage to the mask and/or actuators.

Further it would have been obvious to one of ordinary skill in the art to modify Bruijn to control the deposition using the mask so that the most uniform layer with the smallest tolerance can be formed, since this is the ultimate goal in forming a uniform layer.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bruijn et al. " Automatic electron-beam deposition of multilayer soft x-ray coatings with laterally graded d-spacing" cited by applicant in view of the acknowledged prior art of figures 2A and 2B and their description.

Bruijn teaches depositing graded or uniform films on a substrate using vapor deposition. Bruijn teaches computer control of a moveable mask, moving the mask in a linear direction, use of a shaped hole slit mask, and programming software to control motion. See the abstract; and pages 916-920. Note pages 917-918.

Bruijn however does not teach ion assisted deposition.

The acknowledged prior teaches ion assisted deposition for depositing multiple materials.

It would have been obvious to one of ordinary skill in the art to modify Bruijn in view of the acknowledged prior and use an ion assisted deposition scheme so that the composition of the deposited layer could be varied in the desired manner.

9. Claims 1-4,6,9,11,12,14,15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Pinarbasi 6,197,164.

Pinarbasi teaches computer control of ion beam sputtering, use of a dynamic mask (flux regulator) which is shaped to provide a uniform deposit and its movement controlled by computer, that the mask can rotate and is movable in X,Y,Z directions, depositing multilayer structures. See the abstract; figures; col. 4, line 26 to col. 5, line 9; col. 6, line 4 to col. 8, line 23; col. 9, lines 19-30; and the claims.

10. Claims 7, 10, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi 6,197,164.

Pinarbasi teaches computer control of ion beam sputtering, use of a dynamic mask (flux regulator) which is shaped to provide a uniform deposit and its movement controlled by computer, that the mask can rotate and is movable in X,Y,Z directions, depositing multilayer structures. See the abstract; figures; col. 4, line 26 to col. 5, line 9; col. 6, line 4 to col. 8, line 23; col. 9, lines 19-30; and the claims.

Pinarbasi however does not expressly state that the computer controls acceleration and velocity during positioning of the mask; and that the thickness does not vary more than .1% across the substrate.

It would have been obvious to one of ordinary skill in the art to modify Pinarbasi to control the acceleration and velocity of mask so that it can be accurately positioned and also prevent damage to the mask and/or actuators.

Further it would have been obvious to one of ordinary skill in the art to modify Pinarbasi to control the deposition using the mask so that the most uniform layer with

the smallest tolerance can be formed, since this is the ultimate goal in forming a uniform layer.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi 6,197,164 in view of the acknowledged prior art of figures 2A and 2B and their description.

Pinarbasi teaches computer control of ion beam sputtering, use of a dynamic mask (flux regulator) which is shaped to provide a uniform deposit and its movement controlled by computer, that the mask can rotate and is movable in X,Y,Z directions, depositing multilayer structures. See the abstract; figures; col. 4, line 26 to col. 5, line 9; col. 6, line 4 to col. 8, line 23; col. 9, lines 19-30; and the claims.

Pinarbasi however does not teach ion assisted deposition.

The acknowledged prior teaches ion assisted deposition for depositing multiple materials.

It would have been obvious to one of ordinary skill in the art to modify Pinarbasi in view of the acknowledged prior and use an ion assisted deposition scheme so that the composition of the deposited layer could be varied in the desired manner.

12. Claims 5,8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi 6,197,164 in view of Morrison, Jr. 4,303,489.

Pinarbasi teaches computer control of ion beam sputtering, use of a dynamic mask (flux regulator) which is shaped to provide a uniform deposit and its movement controlled by computer, that the mask can rotate and is movable in X,Y,Z directions,

depositing multilayer structures. See the abstract; figures; col. 4, line 26 to col. 5, line 9; col. 6, line 4 to col. 8, line 23; col. 9, lines 19-30; and the claims.

Pinarbasi however does not teach varying the film thickness or teach the use of a shaped hole in the mask.

Morrison teaches moving a mask with a shaped hole to produce a variable thickness film. Morrison also teaches that various types of motion can be used including linear, rotational, oscillating movement. See the abstract; figures; col. 1, lines 27-43; and col. 2, line 36 to col. 3, line 11.

It would have been obvious to one of ordinary skill in the art to modify Pinarbasi in view of Morrison and also allow the use of a mask with a shaped hole so that the thickness of the film could be intentionally varied. This would allow the apparatus to be used to either produce uniform layers or variable thickness films and allow the device to accomplish multiple functions with the same basic system and increase market share.

13. Claims 1,3,4,6, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohji et al. 4,315,960.

Ohji et al. teaches moving a shaped mask in a linear direction, sputtering, rotating a mask, and controlling the speed of the mask to give a uniform layer. See the abstract; figures; col. 1, lines 5-42; col. 2, line 24 to col. 4, line 49.

14. Claims 1,3-6, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Morrison, Jr. 4,303,489.

Morrison teaches moving a mask with a shaped hole to produce a variable thickness film. Morrison also teaches that various types of motion can be used

including linear, rotational, oscillating movement. See the abstract; figures; col. 1, lines 27-43; and col. 2, line 36 to col. 3, line 11.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The art cited is of interest in the use of moveable masks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven R Garland whose telephone number is 703-305-9759. The examiner can normally be reached on Monday-Thursday from 6:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-3900.

SRG

Steven R Garland
Examiner
Art Unit 2125

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100